

**ABSTRACT OF THE DISCLOSURE**

The invention includes a deposition apparatus having a reaction chamber, and a microwave source external to the chamber. The microwave source is configured to direct microwave radiation toward the chamber. The chamber includes a window through which microwave radiation from the microwave source can pass into the chamber. The invention also includes deposition methods (such as CVD or ALD methods) in which microwave radiation is utilized to activate at least one component within a reaction chamber during deposition of a material over a substrate within the reaction chamber.